

# TRANSISTOR MODULE

# SQD200A40/60



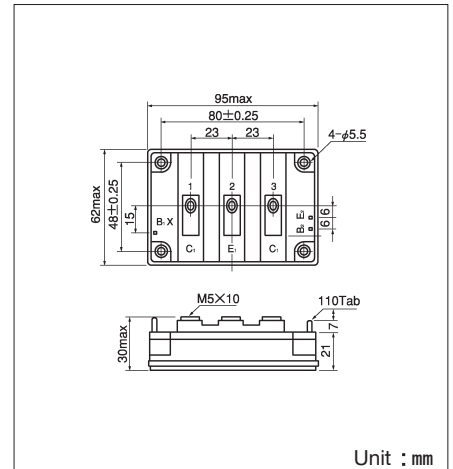
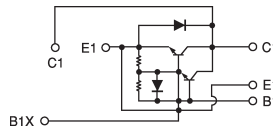
UL;E76102 (M)

SQD200A is a Darlington power transistor module which has a high speed, high power Darlington transistor. The transistor has a reverse parallel fast recovery diode. The mounting base of the module is electrically isolated from semiconductor elements for simple heatsink construction,

- $I_C=200A$ ,  $V_{CEX}=400/600V$
- Low saturation voltage for higher efficiency.
- High DC current gain  $h_{FE}$
- Isolated mounting base
- $V_{EBO}$  10V for faster switching speed.

### (Applications)

Motor Control (VVVF), AC/DC Servo, UPS, Switching Power Supply, Ultrasonic Application



### Maximum Ratings

( $T_j=25^\circ C$ )

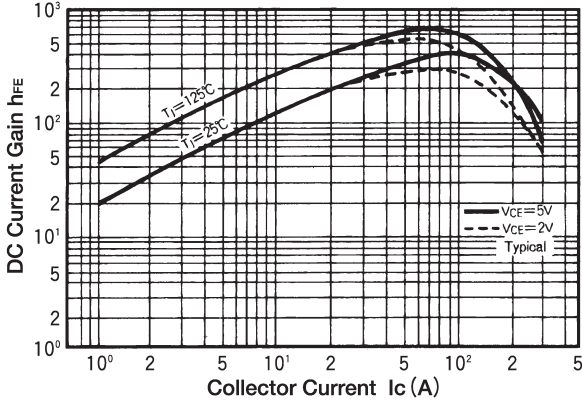
Symbol	Item	Conditions	Ratings		Unit
			SQD200A40	SQD200A60	
$V_{CBO}$	Collector-Base Voltage		400	600	V
$V_{CEX}$	Collector-Emitter Voltage	$V_{BE} = -2V$	400	600	V
$V_{EBO}$	Emitter-Base Voltage		10		V
$I_C$	Collector Current	( ) =pw ≤1ms	200 (400)		A
$-I_C$	Reverse Collector Current		200		A
$I_B$	Base Current		12		A
$P_T$	Total power dissipation	$T_C = 25^\circ C$	1250		W
$T_j$	Junction Temperature		-40 ~ +150		$^\circ C$
$T_{stg}$	Storage Temperature		-40 ~ +125		$^\circ C$
$V_{ISO}$	Isolation Voltage	A.C.1minute	2500		V
	Mounting Torque	(M5)	Recommended Value 1.5~2.5 (15~25)		N·m (kgf·cm)
		Terminal (M5)	Recommended Value 1.5~2.5 (15~25)		
	Mass	Typical Value	380		g

### Electrical Characteristics

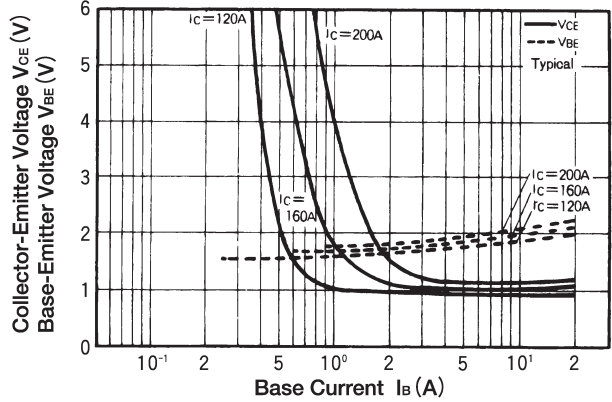
( $T_j=25^\circ C$ )

Symbol	Item	Conditions	Ratings		Unit	
			Min.	Max.		
$I_{CBO}$	Collector Cut-off Current	$V_{CB} = V_{CBO}$		2.0	mA	
$I_{EBO}$	Emitter Cut-off Current	$V_{EB} = V_{EBO}$		800	mA	
$V_{CEO(SUS)}$	Collector Emitter Sustaining Voltage	$I_C = 1A$	300		V	
$V_{CEX(SUS)}$		$I_C = 40A, I_{B2} = -8A$	400		V	
			450			
			600			
$h_{FE}$	DC Current Gain	$I_C = 200A, V_{CE} = 2V$	75			
		$I_C = 200A, V_{CE} = 5V$	100			
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 200A, I_B = 2.7A$		2.0	V	
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 200A, I_B = 2.7A$		2.5	V	
$t_{on}$	Switching Time	$V_{CC} = 300V, I_C = 200A$ $I_{B1} = 4A, I_{B2} = -4A$		2.0	$\mu s$	
$t_s$			Storage Time			12.0
$t_f$			Fall Time			3.0
$V_{ECO}$	Collector-Emitter Reverse Voltage	$-I_C = 200A$		1.4	V	
$R_{th(j-c)}$	Thermal Impedance (junction to case)	Transistor part		0.1	$^\circ C/W$	
		Diode part		0.3		

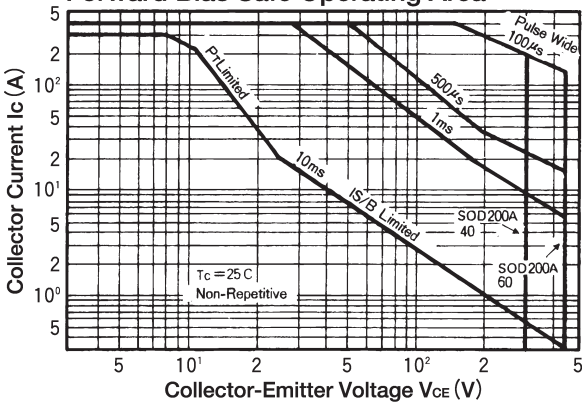
### D.C. Current Gain



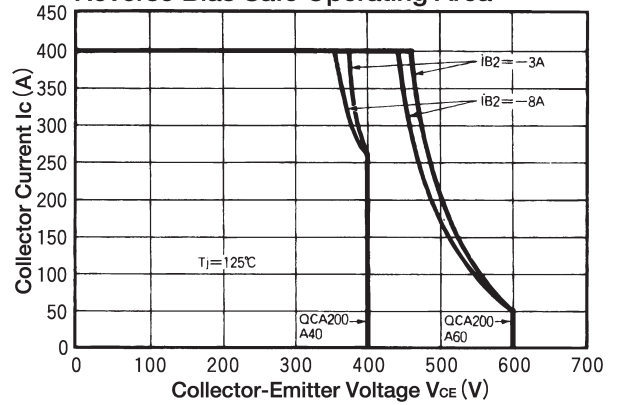
### Saturation Characteristics



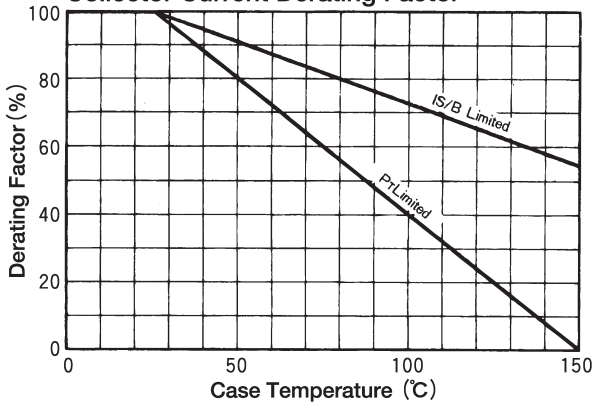
### Forward Bias Safe Operating Area



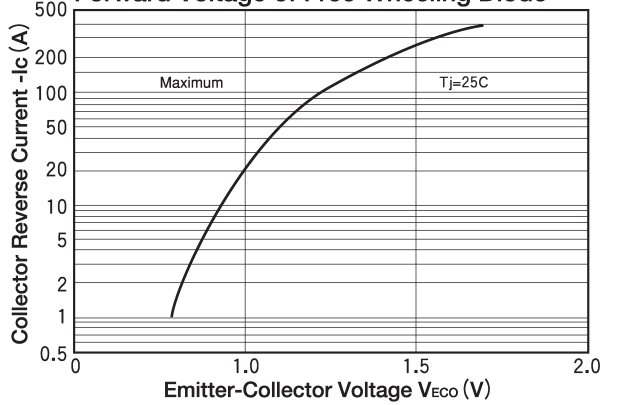
### Reverse Bias Safe Operating Area



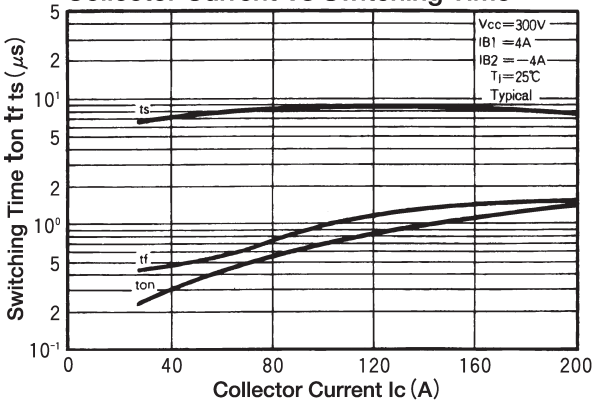
### Collector Current Derating Factor



### Forward Voltage of Free Wheeling Diode



### Collector Current Vs Switching Time



### Maximum Transient Thermal Impedance Characteristics

